



3781-001-27.ST25

SEQUENCE LISTING

RECEIVED

OCT 23 2002 #71

TECH CENTER 1600/2900

<110> Li, Frank Q.  
Chu, Yong-Liang  
Qiu, Jian-Tai

<120> Polymeric Conjugates for Delivery of  
MHC-Recognized Epitopes  
Via Peptide Vaccines

<130> 3781-001-27

<140> US 10/062,710

<141> 2002-02-05

<150> US 60/310,498

<151> 2001-08-08

<160> 232

<170> FastSEQ for Windows Version 4.0

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<212> PRT

<213> HIV-1

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Pro Ala Met Gln Met Leu Lys Glu Thr Ile  
1 5 10

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<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<400> 2

Pro Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys His Ile Val  
1 5 10 15

<210> 3

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<221> VARIANT

<222> 9

<223> Xaa = Any Amino Acid

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&lt;400&gt; 3

Pro Arg Pro Gly Gly Lys Lys Tyr Xaa  
1 5

&lt;210&gt; 4

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 4

Pro Glu Ile Lys Asp Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu  
1 5 10 15

&lt;210&gt; 5

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 5

Pro Ala Ala Ala Asp Thr Gly His Ser Ser Gln Val Ser Gln Asn Tyr  
1 5 10 15

&lt;210&gt; 6

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 6

Pro Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile  
1 5 10 15

&lt;210&gt; 7

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 7

Pro Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys  
1 5 10 15  
Val Val Glu Glu Lys  
20

<210> 8  
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<220>  
 <223> HIV Helper-T Cell Epitopes

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 Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser Glu Cys  
 1 5 10 15

<210> 9  
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<400> 9  
 Pro Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln Ala Ala  
 1 5 10 15  
 Met Gln

<210> 10  
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 <223> HIV Helper-T Cell Epitopes

<400> 10  
 Pro Met Leu Lys Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp Arg  
 1 5 10 15

<210> 11  
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<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 11  
 Pro Met Arg Glu Pro Arg Gly Ser Asp  
 1 5

<210> 12  
 <211> 23  
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&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 12

Pro	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Asn	Asn	Pro	Pro	Ile	Pro
1				5					10					15	
Val	Gly	Glu	Ile	Tyr	Lys	Arg									
			20												

&lt;210&gt; 13

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 13

Pro	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1				5					10					15	

&lt;210&gt; 14

&lt;211&gt; 20

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 14

Pro	Gln	Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Tyr	Lys
1				5					10					15	
Thr	Leu	Arg	Ala												
			20												

&lt;210&gt; 15

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 15

Pro	Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn
1				5					10					15	

&lt;210&gt; 16

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 16

Pro Pro Ser Tyr Lys Gly Arg Pro Gly  
1 5

&lt;210&gt; 17

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 17

Pro Glu Ser Phe Arg Ser Gly Val Glu Thr Thr Thr Pro Pro Gln Lys  
1 5 10 15

&lt;210&gt; 18

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 18

Pro Cys Thr Glu Met Glu Lys Glu Gly Lys Ile Ser Lys Ile Gly Pro  
1 5 10 15

&lt;210&gt; 19

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 19

Pro Trp Glu Val Gln Leu Gly Ile Pro His Pro Ala Gly Leu Lys Lys  
1 5 10 15

&lt;210&gt; 20

&lt;211&gt; 12

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 20

Pro Ser Ser Thr Val Asn Asp Ile Gln Lys Leu Val  
1 5 10

&lt;210&gt; 21

<211> 16  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 21  
 Pro Gly Thr Lys Ala Leu Thr Glu Val Ile Pro Leu Thr Glu Glu Ala  
 1 5 10 15

<210> 22  
 <211> 12  
 <212> PRT  
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<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 22  
 Pro Ser Ala Gly Ile Arg Lys Val Leu Phe Leu Asp  
 1 5 10

<210> 23  
 <211> 14  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 23  
 Pro Lys Gln Ile Thr Lys Ile Gln Asn Phe Arg Val Tyr Tyr  
 1 5 10

<210> 24  
 <211> 13  
 <212> PRT  
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<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 24  
 Pro Val Ile Thr Thr Tyr Trp Gly Leu His Thr Gly Glu  
 1 5 10

<210> 25  
 <211> 17  
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<220>  
 <223> HIV Helper-T Cell Epitopes

&lt;400&gt; 25

Pro Leu Gly Gln Gly Val Ser Ile Glu Trp Arg Lys Gln Arg Tyr Ser  
 1 5 10 15  
 Thr

&lt;210&gt; 26

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 26

Pro Gln Leu Leu Phe Ile His Phe Arg Ile Gly Cys Arg His Ser Arg  
 1 5 10 15

&lt;210&gt; 27

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 27

Pro Ser Gln Pro Lys Thr Ala Cys Thr Thr Cys Tyr Cys Lys Lys Cys  
 1 5 10 15  
 Cys Phe His Cys Gln  
 20

&lt;210&gt; 28

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 28

Pro Ser Tyr Gly Arg Lys Lys Arg Arg Gln Arg Arg Arg Pro Pro Gln  
 1 5 10 15  
 Gly Ser Gln Thr His  
 20

&lt;210&gt; 29

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 29

Pro Val Ser Leu Ser Lys Gln Pro Thr Ser Gln Pro Arg Gly Asp Pro  
 1 5 10 15  
 Thr Gly Pro Lys Glu  
 20

&lt;210&gt; 30

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 30

Pro Val Arg Leu Ile Lys Phe Leu Tyr Gln Ser Asn Pro Pro Pro Asn  
 1 5 10 15  
 Pro Glu Gly Thr Arg  
 20

&lt;210&gt; 31

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 31

Pro Ser Asn Pro Pro Pro Asn Pro Glu Gly Thr Arg Gln Ala Arg Arg  
 1 5 10 15

&lt;210&gt; 32

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 32

Pro Pro Pro Leu Glu Arg Leu Thr Leu Asp Cys Asn Glu Asp Cys Gly  
 1 5 10 15  
 Thr Ser Gly Thr Gln  
 20

&lt;210&gt; 33

&lt;211&gt; 12

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes



&lt;400&gt; 33

Pro Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala  
 1 5 10

&lt;210&gt; 34

&lt;211&gt; 13

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 34

Pro Cys Val Pro Thr Asn Pro Val Pro Gln Glu Val Val  
 1 5 10

&lt;210&gt; 35

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 35

Pro Glu Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu  
 1 5 10 15

&lt;210&gt; 36

&lt;211&gt; 14

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 36

Pro His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu Lys  
 1 5 10

&lt;210&gt; 37

&lt;211&gt; 18

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 37

Pro Trp Asp Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys  
 1 5 10 15  
 Val Ser

<210> 38  
 <211> 14  
 <212> PRT  
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<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 38  
 Pro Leu Lys Cys Thr Asp Leu Gly Asn Ala Thr Asn Thr Asn  
 1 5 10

<210> 39  
 <211> 16  
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<220>  
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<400> 39  
 Pro Lys Asn Cys Ser Phe Asn Ile Ser Thr Ser Ile Arg Gly Lys Val  
 1 5 10 15

<210> 40  
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<400> 40  
 Pro Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asn Lys Thr Phe Asn  
 1 5 10 15

<210> 41  
 <211> 10  
 <212> PRT  
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<220>  
 <223> HIV Helper-T Cell Epitopes

<400> 41  
 Pro Phe Ala Ile Leu Lys Cys Asn Asn Lys  
 1 5 10

<210> 42  
 <211> 14  
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<223> HIV Helper-T Cell Epitopes

<400> 42

Pro Gly Thr Gly Pro Cys Thr Asn Val Ser Thr Val Gln Cys  
1 5 10

<210> 43

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<400> 43

Pro Asn Ala Lys Thr Ile Ile Val Gln Leu Asn Glu Ser Val Ala Ile  
1 5 10 15  
Cys

<210> 44

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<400> 44

Pro Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile Gly Lys  
1 5 10 15

<210> 45

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<400> 45

Pro Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile Gly Lys Ile  
1 5 10 15  
Gly Asn

<210> 46

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

&lt;400&gt; 46

Pro Arg Ile Ile Gly Asp Ile Arg Lys Ala His Cys Asn Ile Ser Arg  
 1 5 10 15  
 Tyr

&lt;210&gt; 47

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 47

Pro Gly Ala Ala Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser  
 1 5 10 15  
 Ser Asn Thr Ala Ala  
 20

&lt;210&gt; 48

&lt;211&gt; 22

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 48

Pro Gln Glu Glu Glu Glu Val Gly Phe Pro Val Thr Pro Gln Val Pro  
 1 5 10 15  
 Pro Leu Arg Pro Met Thr  
 20

&lt;210&gt; 49

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV Helper-T Cell Epitopes

&lt;400&gt; 49

Pro Leu Lys Glu Lys Gly Gly Leu Glu Gly Leu Ile His Ser Gln Arg  
 1 5 10 15  
 Arg Gln Asp Ile Leu  
 20

&lt;210&gt; 50

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> HIV Helper-T Cell Epitopes

<400> 50

Pro His Pro Val Ser Leu His Gly Met Asp Asp Pro Glu Arg Glu Val  
 1 5 10 15  
 Leu Glu Trp Arg Phe  
 20

<210> 51

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV Helper-T Cell Epitopes

<400> 51

Pro Glu Trp Arg Phe Asp Ser Arg Leu Ala Phe His His Val Ala Arg  
 1 5 10 15  
 Glu Leu His Pro Glu Tyr Phe Lys Asn  
 20 25

<210> 52

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 52

Pro Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu  
 1 5 10

<210> 53

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 53

Pro Gly Gln Met Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala  
 1 5 10 15  
 Trp Val Lys Val Val  
 20

<210> 54

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 54

Pro	Val	His	Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp	Val	Lys
1				5					10					15	
Val	Val	Glu	Glu	Lys	Ala	Phe									
		20													

<210> 55

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 55

Pro	His	Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu
1				5					10

<210> 56

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 56

Pro	Gln	Ala	Ile	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp
1				5					10		

<210> 57

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 57

Pro	Leu	Ser	Pro	Arg	Thr	Leu	Asn	Ala	Trp
1				5					10

<210> 58

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 58

Pro	Asp	Thr	Val	Leu	Glu	Asp	Ile	Asn	Leu
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1 5 10

<210> 59  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 59  
 Pro Ser Leu Tyr Asn Val Ala Thr Leu  
 1 5

<210> 60  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 60  
 Pro Leu Ser Pro Arg Thr Leu Asn Ala Trp  
 1 5 10

<210> 61  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 61  
 Pro Tyr Pro Leu Thr Phe Gly Trp Cys Phe  
 1 5 10

<210> 62  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 62  
 Pro Ser Pro Arg Thr Leu Asn Ala Trp Val  
 1 5 10

<210> 63  
 <211> 21  
 <212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 63

Pro Asn Ala Trp Val Lys Val Val Glu Glu Lys Ala Phe Ser Pro Glu  
 1 5 10 15  
 Val Ile Pro Met Phe  
 20

<210> 64

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 64

Pro Glu Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala  
 1 5 10 15  
 Leu Ser Glu Gly Ala  
 20

<210> 65

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 65

Pro Glu Val Ile Pro Met Phe Ser Ala Leu  
 1 5 10

<210> 66

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 66

Pro Val Ile Pro Met Phe Ser Ala  
 1 5

<210> 67

<211> 11

<212> PRT

<213> Artificial Sequence



&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 67

Pro	Ala	Thr	Pro	Gln	Asp	Leu	Asn	Met	Met	Leu
1				5					10	

&lt;210&gt; 68

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 68

Pro	Thr	Pro	Gln	Asp	Leu	Asn	Thr	Met	Leu
1				5					10

&lt;210&gt; 69

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 69

Pro	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val
1				5					10

&lt;210&gt; 70

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 70

Pro	Asp	Leu	Asn	Thr	Met	Leu	Asn	Thr	Val	Gly	Gly	His	Gln	Ala	Ala
1					5				10					15	
Met	Gln	Met	Leu	Lys											
			20												

&lt;210&gt; 71

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 71

Pro Gly His Gln Ala Ala Met Gln Met Leu  
 1 5 10

<210> 72  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 72  
 Pro Ala Met Gln Met Leu Lys Glu Thr Ile  
 1 5 10

<210> 73  
 <211> 11  
 <212> PRT  
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<220>  
 <223> HIV CTL-Epitopes

<400> 73  
 Pro Val His Pro Val His Ala Gly Pro Ile Ala  
 1 5 10

<210> 74  
 <211> 21  
 <212> PRT  
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<220>  
 <223> HIV CTL-Epitopes

<400> 74  
 Pro Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr Leu Gln Glu Gln Ile  
 1 5 10 15  
 Gly Trp Met Thr Asn  
 20

<210> 75  
 <211> 12  
 <212> PRT  
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<220>  
 <223> HIV CTL-Epitopes

<400> 75  
 Pro Thr Ser Thr Leu Gln Glu Gln Ile Gly Trp Phe  
 1 5 10

<210> 76  
 <211> 19  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 76  
 Pro Asn Pro Pro Ile Pro Gly Glu Ile Lys Arg Trp Ile Ile Leu Gly  
 1 5 10 15  
 Asn Ile Lys

<210> 77  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 77  
 Pro Pro Pro Ile Pro Val Gly Asp Ile Tyr  
 1 5 10

<210> 78  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 78  
 Pro Gly Glu Ile Tyr Lys Arg Trp Ile Ile  
 1 5 10

<210> 79  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 79  
 Pro Lys Arg Trp Ile Ile Leu Gly Leu Asn  
 1 5 10

<210> 80  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 80

Pro	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1				5				10						15	

Cys

&lt;210&gt; 81

&lt;211&gt; 14

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 81

Pro	Lys	Trp	Ile	Leu	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1				5				10					

&lt;210&gt; 82

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 82

Pro	Gly	Leu	Asn	Lys	Ile	Val	Arg	Met	Tyr
1				5				10	

&lt;210&gt; 83

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 83

Pro	Asp	Arg	Phe	Tyr	Lys	Leu	Thr	Arg	Ala
1				5				10	

&lt;210&gt; 84

&lt;211&gt; 12

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV CTL-Epitopes

&lt;400&gt; 84

Pro Ala Glu Gln Ala Ser Gln Glu Val Lys Asn Trp  
 1 5 10

<210> 85  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 85  
 Pro Asn Ala Asn Pro Asp Cys Lys Thr Ile  
 1 5 10

<210> 86  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 86  
 Pro Asn Pro Asp Cys Lys Thr Ile Leu  
 1 5

<210> 87  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 87  
 Pro Ser Gln Val Thr Asn Pro Ala Asn Ile  
 1 5 10

<210> 88  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 88  
 Pro Lys Glu Gly His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn  
 1 5 10 15  
 Phe

<210> 89  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 89  
 Pro Gly Asn Phe Leu Gln Ser Arg Glu Pro Glu Pro Thr Ala Pro Pro  
 1 5 10 15  
 Phe

<210> 90  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 90  
 Pro Tyr Pro Leu Thr Ser Leu Arg Ser Leu Phe  
 1 5 10

<210> 91  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 91  
 Pro Arg Val Lys Glu Lys Tyr Gln His Leu  
 1 5 10

<210> 92  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 92  
 Pro Ala Ala Glu Gln Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val  
 1 5 10 15  
 Trp Lys Glu Ala Thr  
 20

<210> 93  
 <211> 11

<212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 93  
 Pro Lys Leu Trp Val Thr Val Tyr Tyr Gly Val  
 1 5 10

<210> 94  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 94  
 Pro Thr Val Tyr Tyr Gly Val Pro Val Trp Lys  
 1 5 10

<210> 95  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 95  
 Pro Asp Thr Glu Val His Asn Val Trp Ala Thr His Ala Cys Val Pro  
 1 5 10 15  
 Thr Asp Pro Asn  
 20

<210> 96  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 96  
 Pro Asp Pro Asn Pro Gln Glu Val Val Leu  
 1 5 10

<210> 97  
 <211> 14  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 97

Pro His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu Lys  
1 5 10

<210> 98

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 98

Pro Lys Leu Thr Pro Leu Cys Val Thr Leu  
1 5 10

<210> 99

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 99

Pro Lys Leu Thr Ser Cys Asn Thr Ser Val  
1 5 10

<210> 100

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 100

Pro Val Ser Phe Glu Pro Ile Pro Ile His Tyr  
1 5 10

<210> 101

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV CTL-Epitopes

<400> 101

Pro Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu  
1 5 10 15  
Lys Cys Asn Asn



20

<210> 102  
 <211> 27  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 102  
 Pro Thr Arg Pro Asn Asn Asn Thr Arg Lys Arg Ile Arg Ile Gln Arg  
 1 5 10 15  
 Gly Pro Gly Arg Ala Phe Val Thr Ile Gly Lys  
 20 25

<210> 103  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 103  
 Pro Trp Pro Thr Val Arg Glu Arg Met  
 1 5

<210> 104  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 104  
 Pro Glu Glu Glu Glu Val Gly Phe Pro Val Thr Pro Gln Val Pro Leu  
 1 5 10 15  
 Arg Pro Met Thr Tyr  
 20

<210> 105  
 <211> 33  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 105  
 Pro Val Gly Phe Pro Val Thr Pro Gln Val Pro Leu Arg Pro Met Thr  
 1 5 10 15  
 Tyr Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly

Leu                    20                    25                    30

<210> 106  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 106  
 Pro Phe Pro Val Thr Pro Gln Val Pro Leu  
 1                                    5                                    10

<210> 107  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 107  
 Pro Arg Pro Gln Val Pro Leu Arg Pro Met Thr Tyr  
 1                                    5                                    10

<210> 108  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 108  
 Pro Val Pro Leu Arg Pro Met Thr Tyr  
 1                                    5

<210> 109  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 109  
 Pro Gln Val Pro Leu Arg Pro Met Thr Tyr Lys  
 1                                    5                                    10

<210> 110

<211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 110  
 Pro Val Pro Leu Arg Pro Met Thr Tyr  
 1 5

<210> 111  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 111  
 Pro Lys Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly  
 1 5 10 15  
 Leu Glu Gly Leu Ile  
 20

<210> 112  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV CTL-Epitopes

<400> 112  
 Pro Asp Leu Ser His Phe Leu Lys Glu Lys  
 1 5 10

<210> 113  
 <211> 19  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 113  
 Pro Glu Leu Asp Lys Trp Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys  
 1 5 10 15  
 Thr Leu Tyr

<210> 114  
 <211> 19  
 <212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 114

Pro Ile Arg Leu Pro Gly Gly Lys Lys Tyr Met Leu Lys His Val Val  
 1 5 10 15  
 Trp Ala Ala

<210> 115

<211> 24

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 115

Pro Lys Leu Lys His Ile Ile Trp Ala Ser Arg Glu Leu Glu Arg Phe  
 1 5 10 15  
 Ala Val Asn Pro Gly Leu Leu Glu  
 20

<210> 116

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 116

Pro Leu Glu Thr Ser Glu Gly Cys Arg Gln Ile Leu Gly Gln Leu Gln  
 1 5 10 15

<210> 117

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 117

Pro Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp Thr Lys Glu Ala  
 1 5 10 15  
 Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Lys Lys Lys Ala  
 20 25 30

<210> 118

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 118

Pro	Tyr	Ser	Val	His	Gln	Arg	Ile	Asp	Val	Lys	Asp	Thr	Lys	Glu	Ala
1				5					10					15	
Leu	Glu	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Lys	Lys	Lys	Ala	
			20					25					30		

<210> 119

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 119

Pro	Lys	Lys	Ala	Gln	Gln	Ala	Ala	Ala	Asp	Thr
1				5					10	

<210> 120

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 120

Pro	Ala	Ala	Gly	Thr	Gly	Asn	Ser	Ser	Gln	Val	Ser	Gln	Asn	Tyr
1				5					10					15

<210> 121

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 121

Pro	Asp	Thr	Gly	His	Ser	Ser	Gln	Val	Ser	Gln	Asn	Tyr
1				5					10			

<210> 122

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

&lt;400&gt; 122

Pro Pro Ile Val Gln Asn Ile Gln Gly Gln Met Val His Gln Ala Ile  
 1 5 10 15  
 Ser Pro Arg Thr Leu  
 20

&lt;210&gt; 123

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 123

Pro Val His Gln Ala Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys  
 1 5 10 15

&lt;210&gt; 124

&lt;211&gt; 7

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 124

Pro Glu Gly Ala Thr Pro Gln  
 1 5

&lt;210&gt; 125

&lt;211&gt; 12

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 125

Pro Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu  
 1 5 10

&lt;210&gt; 126

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 126

Pro Asp Leu Asn Thr Met Leu Asn Thr Val Gly  
 1 5 10

<210> 127  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 127  
 Pro Glu Thr Ile Asn Glu Glu Ala Ala Glu Trp Asp  
 1 5 10

<210> 128  
 <211> 7  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 128  
 Pro Leu Ala Glu Ala Met Ser  
 1 5

<210> 129  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 129  
 Pro Asn Phe Arg Asn Gln Arg Lys Ile Val Lys  
 1 5 10

<210> 130  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 130  
 Pro Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly  
 1 5 10

<210> 131  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 131

Pro Arg Gln Ala Asn Phe Leu Gly Lys Ile Trp Pro Ser Tyr Lys Gly  
 1 5 10 15  
 Arg

<210> 132

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 132

Pro Tyr Lys Gly Arg Pro Gly Asn Phe Leu  
 1 5 10

<210> 133

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 133

Pro Glu Leu Asp Arg Trp Glu Lys Ile  
 1 5

<210> 134

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 134

Pro Ala Leu Asp Lys Ile Glu  
 1 5

<210> 135

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 135

Pro Asp Ile Arg Gln Gly Pro



1 5

<210> 136  
 <211> 7  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 136  
 Pro Gln Gly Val Gly Gly Pro  
 1 5

<210> 137  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 137  
 Pro Pro Gln Ile Tyr Leu Trp Gln  
 1 5

<210> 138  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 138  
 Pro Met Ser Leu Pro Gly Arg Trp Lys Pro Lys Met  
 1 5 10

<210> 139  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 139  
 Pro Leu Pro Gly Arg Trp Lys Pro Lys  
 1 5

<210> 140  
 <211> 10  
 <212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 140

Pro Pro Leu Thr Glu Glu Ala Glu Leu Glu  
1 5 10

<210> 141

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 141

Pro Pro Leu Thr Glu Ala Glu Leu Glu Leu Ala Glu Asn Arg Glu Ile  
1 5 10 15  
Leu Lys Glu Pro Val His Gly Val Tyr  
20 25

<210> 142

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 142

Pro Leu Thr Glu Glu Ala Glu Leu Glu Leu Ala  
1 5 10

<210> 143

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 143

Pro Val Asp Gly Ala Ala Asn Arg Glu Thr  
1 5 10

<210> 144

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

&lt;400&gt; 144

Pro Val Pro Ala His Lys Gly Ile Gly Gly Asn Glu Gln Val Asp  
 1 5 10 15

&lt;210&gt; 145

&lt;211&gt; 15

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 145

Pro Lys Ala Arg Gly Trp Phe Tyr Arg His His Tyr Glu Ser Pro  
 1 5 10 15

&lt;210&gt; 146

&lt;211&gt; 19

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;221&gt; VARIANT

&lt;222&gt; 19

&lt;223&gt; Xaa = Any Amino Acid

&lt;400&gt; 146

Pro Lys Pro Gln Lys Thr Lys Gly His Arg Gly Ser His Thr Met Asn  
 1 5 10 15  
 Gly His Xaa

&lt;210&gt; 147

&lt;211&gt; 15

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 147

Pro Glu Pro Val Asp Pro Asn Leu Glu Pro Trp Asn His Pro Ser  
 1 5 10 15

&lt;210&gt; 148

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 148

Pro Glu Pro Val Asp Pro Arg Leu Glu Trp Lys His Pro Gly Ser Gln  
 1 5 10 15

&lt;210&gt; 149

&lt;211&gt; 15

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 149

Pro Pro Thr Ser Gln Pro Arg Gly Asp Pro Thr Gly Pro Lys Glu  
 1 5 10 15

&lt;210&gt; 150

&lt;211&gt; 19

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 150

Pro Glu Gly Thr Arg Gln Ala Arg Arg Asn Arg Arg Arg Trp Arg Glu  
 1 5 10 15  
 Arg Gln Arg

&lt;210&gt; 151

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 151

Pro Pro Val Pro Leu Gln Leu Pro Pro Leu Glu Arg Leu Thr Leu Asp  
 1 5 10 15

&lt;210&gt; 152

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 152

Pro Gly Val Gly Ser Pro Gln Ile Leu Val Glu  
 1 5 10

<210> 153  
 <211> 23  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 153  
 Pro Ala Thr Glu Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val  
 1 5 10 15  
 Trp Lys Glu Ala Thr Thr Thr  
 20

<210> 154  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 154  
 Pro Gly Val Pro Val Trp Lys Glu Ala Thr Thr  
 1 5 10

<210> 155  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 155  
 Pro Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val His  
 1 5 10 15  
 Asn Val Trp Ala Thr  
 20

<210> 156  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 156  
 Pro Tyr Asp Thr Glu Val His Asn Val Trp Ala  
 1 5 10

<210> 157  
 <211> 21

<212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 157  
 Pro Ala Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Val Val Leu Val  
 1 5 10 15  
 Asn Val Thr Glu Asn  
 20

<210> 158  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 158  
 Pro Pro Gln Glu Val Val Leu Val Asn Val Thr  
 1 5 10

<210> 159  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 159  
 Pro Pro Gln Glu Val Val Leu Val Asn Val Thr Glu Asn Phe Asp Met  
 1 5 10 15  
 Trp Lys Asn Asp Met  
 20

<210> 160  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 160  
 Pro Glu Val Val Leu Val Asn Val Thr Glu Asn  
 1 5 10

<210> 161  
 <211> 16  
 <212> PRT  
 <213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 161

Pro	Arg	Ile	His	Ile	Gly	Pro	Gly	Arg	Ala	Phe	Tyr	Thr	Thr	Lys	Asn
1				5					10					15	

&lt;210&gt; 162

&lt;211&gt; 8

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 162

Pro	Ile	His	Ile	Gly	Pro	Gly	Arg
1				5			

&lt;210&gt; 163

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 163

Pro	Ile	Gln	Arg	Gly	Pro	Gly	Arg	Ala	Phe	Val
1				5					10	

&lt;210&gt; 164

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 164

Pro	Ala	His	Cys	Asn	Ile	Ser	Arg	Ala	Lys	Trp
1				5					10	

&lt;210&gt; 165

&lt;211&gt; 11

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 165

Pro	Val	Gly	Trp	Pro	Thr	Val	Arg	Glu	Arg	Met
1				5					10	

<210> 166  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 166  
 Pro Thr Val Arg Glu Arg Met Arg Arg Ala Glu  
 1 5 10

<210> 167  
 <211> 15  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 167  
 Pro Val Gly Ala Ala Ser Arg Asp Leu Glu Lys His Gly Ala Ile  
 1 5 10 15

<210> 168  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 168  
 Pro Gly Ala Ala Ser Arg Asp Leu Glu Lys His  
 1 5 10

<210> 169  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HIV B Cell Epitopes

<400> 169  
 Pro Gly Ala Ala Ser Arg Asp Leu Glu Lys His Gly Ala Ile Thr Ser  
 1 5 10 15  
 Ser Asn Thr Ala Ala  
 20

<210> 170  
 <211> 15  
 <212> PRT



<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 170

Pro Ala Gln Glu Glu Glu Glu Val Gly Phe Pro Val Thr Pro Gln  
1 5 10 15

<210> 171

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 171

Pro Ala Ala Val Asp Leu Ser  
1 5

<210> 172

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 172

Pro Ala Ala Val Asp Leu Ser His Phe Leu Lys Glu Lys Gly Gly Leu  
1 5 10 15  
Glu Gly Leu Ile Ser His  
20

<210> 173

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

<400> 173

Pro Val Glu Pro Asp Lys Val Glu Glu Ala Asn  
1 5 10

<210> 174

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> HIV B Cell Epitopes

&lt;400&gt; 174

Pro Asp Lys Val Glu Glu Ala Asn Lys Gly Glu Asn Thr Ser Leu Leu  
 1 5 10 15  
 His Pro Val Ser Leu  
 20

&lt;210&gt; 175

&lt;211&gt; 25

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 175

Pro Lys Gly Glu Asn Thr Ser Leu Leu His Pro Val Ser Leu His Gly  
 1 5 10 15  
 Met Asp Asp Pro Glu Arg Glu Val Leu  
 20 25

&lt;210&gt; 176

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; HIV B Cell Epitopes

&lt;400&gt; 176

Pro His Gly Met Asp Asp Pro Glu Arg Glu Val Leu Glu Trp Arg Phe  
 1 5 10 15  
 Asp Ser Arg Leu Ala  
 20

&lt;210&gt; 177

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; MPT64 protein

&lt;400&gt; 177

Pro Ala Pro Lys Thr Tyr Cys Glu Glu Leu Lys Gly Thr Asp Thr Gly  
 1 5 10 15  
 Gln Ala Cys Gln Ile  
 20

&lt;210&gt; 178

&lt;211&gt; 21

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> MPT64 protein

<400> 178

Pro Gly Thr Asp Thr Gly Gln Ala Cys Gln Ile Gln Met Ser Asp Pro  
 1 5 10 15  
 Ala Tyr Asn Ile Asn  
 20

<210> 179

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> MPT64 protein

<400> 179

Pro Gln Met Ser Asp Pro Ala Tyr Asn Ile Asn Ile Ser Leu Pro Ser  
 1 5 10 15  
 Tyr Tyr Phe Asp Gln  
 20

<210> 180

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> MPT64 protein

<400> 180

Pro Ile Ser Leu Pro Ser Tyr Tyr Pro Asp Gln Lys Ser Leu Glu Asn  
 1 5 10 15  
 Tyr Ile Ala Gln Thr  
 20

<210> 181

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> MPT64 protein

<400> 181

Pro Arg Asp Lys Phe Leu Ser Ala Ala Thr Ser Ser Thr Phe Arg Glu  
 1 5 10 15  
 Ala Phe Tyr Glu Leu  
 20

<210> 182

<211> 10

<212> PRT

<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Tyrosinase-related protein 2 epitopes

&lt;400&gt; 182

Pro	Val	Ile	Arg	Gln	Asn	Ile	His	Ser	Leu
1				5					10

&lt;210&gt; 183

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Tyrosinase-related protein 2 epitopes

&lt;400&gt; 183

Pro	Leu	Leu	Gly	Pro	Gly	Arg	Pro	Tyr	Arg
1				5					10

&lt;210&gt; 184

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Tyrosinase-related protein 2 epitopes

&lt;400&gt; 184

Pro	Ser	Val	Tyr	Asp	Phe	Phe	Val	Trp	Leu
1				5					10

&lt;210&gt; 185

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Tyrosinase-related protein 2 epitopes

&lt;400&gt; 185

Pro	Val	Thr	Trp	His	Arg	Tyr	His	Leu	Leu
1				5					10

&lt;210&gt; 186

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Tyrosinase-related protein 2 epitopes

&lt;400&gt; 186

Pro	Ser	Leu	Asp	Asp	Tyr	Asn	His	Leu	Val
1				5					10

<210> 187  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 187  
 Pro Ser Leu His Asn Leu Val His Ser Phe Leu  
 1 5 10

<210> 188  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 188  
 Pro Thr Ala Ile Asp Leu Pro Val Ser Val  
 1 5 10

<210> 189  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 189  
 Pro Ala Asn Asp Pro Ile Phe Val Val Leu  
 1 5 10

<210> 190  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 190  
 Pro Tyr Met Asp Gly Thr Met Ser Gln Val  
 1 5 10

<210> 191  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 191  
 Pro Gly Leu Phe Val Leu Leu Ala Phe Leu  
 1 5 10

<210> 192  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 192  
 Pro Ala Leu Val Gly Leu Phe Val Leu Leu  
 1 5 10

<210> 193  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Tyrosinase-related protein 2 epitopes

<400> 193  
 Pro Ala Ala Gly Ile Gly Ile Leu Thr Val  
 1 5 10

<210> 194  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HER2/neu breast cancer antigens

<400> 194  
 Pro Ile Ile Ser Ala Val Val Gly Ile Leu  
 1 5 10

<210> 195  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HER2/neu breast cancer antigens

<400> 195  
 Pro Lys Ile Phe Gly Ser Leu Ala Phe  
 1 5

<210> 196  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> HER2/neu breast cancer antigens

<400> 196  
 Pro Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
 1 5 10 15  
 Gly Val Thr Ser Ala  
 20

<210> 197  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T Cell epitopes

<400> 197  
 Pro Ala Ala Arg Ala Val Phe Leu Ala Leu  
 1 5 10

<210> 198  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T Cell epitopes

<400> 198  
 Pro Tyr Arg Pro Arg Pro Arg Arg Tyr  
 1 5

<210> 199  
 <211> 10  
 <212> PRT  
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<220>  
 <223> T Cell epitopes

<400> 199  
 Pro Val Leu Pro Asp Val Phe Ile Arg Cys  
 1 5 10

<210> 200  
 <211> 10  
 <212> PRT

<213> Artificial Sequence

<220>

<223> T Cell epitopes

<400> 200

Pro Ala Tyr Gly Leu Asp Phe Tyr Ile Leu  
1 5 10

<210> 201

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> T Cell epitopes

<400> 201

Pro Ser Tyr Leu Asp Ser Gly Ile His Phe  
1 5 10

<210> 202

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> T Cell epitopes

<400> 202

Pro Glu Glu Lys Leu Ile Val Val Leu Phe  
1 5 10

<210> 203

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> T Cell epitopes

<400> 203

Pro Ala Cys Asp Pro His Ser Gly His Phe Val  
1 5 10

<210> 204

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> T Cell epitopes

<400> 204



Pro Ile Ile Ser Ala Val Val Gly Ile Leu  
 1 5 10

<210> 205  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T Cell epitopes

<400> 205  
 Pro Lys Ile Phe Gly Ser Leu Ala Phe Leu  
 1 5 10

<210> 206  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T Cell epitopes

<400> 206  
 Pro Tyr Met Leu Asp Leu Gln Pro Glu Thr Thr  
 1 5 10

<210> 207  
 <211> 21  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> T Cell epitopes

<400> 207  
 Pro Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
 1 5 10 15  
 Gly Val Thr Ser Ala  
 20

<210> 208  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 208  
 Pro Gly Leu Tyr Ser Ser Tyr Val Pro Val  
 1 5 10

<210> 209  
 <211> 10  
 <212> PRT

<213> Hepatitis B

<400> 209

Pro Gly Leu Tyr Ser Ser Thr Val Pro Val  
1 5 10

<210> 210

<211> 10

<212> PRT

<213> Hepatitis B

<400> 210

Pro Gly Leu Ser Arg Tyr Val Ala Arg Leu  
1 5 10

<210> 211

<211> 11

<212> PRT

<213> Hepatitis B

<400> 211

Pro Ile Leu Arg Gly Tyr Ser Phe Val Arg Val  
1 5 10

<210> 212

<211> 10

<212> PRT

<213> Hepatitis B

<400> 212

Pro Ser Leu Tyr Ala Asp Ser Pro Ser Val  
1 5 10

<210> 213

<211> 10

<212> PRT

<213> Hepatitis B

<400> 213

Pro Phe Leu Leu Ser Leu Gly Ile His Leu  
1 5 10

<210> 214

<211> 10

<212> PRT

<213> Hepatitis B

<400> 214

Pro Val Leu Gln Ala Gly Phe Phe Leu Leu  
1 5 10

<210> 215

<211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 215  
 Pro Phe Leu Leu Thr Arg Ile Leu Thr Ile  
 1 5 10

<210> 216  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 216  
 Pro Phe Leu Gly Gly Thr Pro Val Cys Leu  
 1 5 10

<210> 217  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 217  
 Pro Leu Leu Cys Leu Ile Phe Leu Leu Val  
 1 5 10

<210> 218  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 218  
 Pro Leu Leu Asp Tyr Gln Gly Met Leu Pro  
 1 5 10

<210> 219  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 219  
 Pro Trp Leu Ser Leu Leu Val Pro Phe Val  
 1 5 10

<210> 220  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 220  
 Pro Gly Leu Ser Pro Thr Val Trp Leu Ser  
 1 5 10

<210> 221  
 <211> 9  
 <212> PRT  
 <213> Hepatitis B

<400> 221  
 Pro Phe Val Gln Trp Phe Val Gly Leu  
 1 5

<210> 222  
 <211> 10  
 <212> PRT  
 <213> Hepatitis B

<400> 222  
 Pro Ile Leu Ser Pro Phe Leu Pro Leu Leu  
 1 5 10

<210> 223  
 <211> 10  
 <212> PRT  
 <213> Hepatitis C

<400> 223  
 Pro Ala Tyr Ser Gln Gln Thr Arg Gly Leu  
 1 5 10

<210> 224  
 <211> 10  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 224  
 Pro Arg Arg Ile Tyr Asp Leu Ile Glu Leu  
 1 5 10

<210> 225  
 <211> 12  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 225  
 Pro Arg Arg Ala Arg Ser Leu Ser Ala Glu Arg Tyr  
 1 5 10

<210> 226  
 <211> 10  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 226  
 Pro Arg Arg Arg Trp Arg Arg Leu Thr Val  
 1 5 10

<210> 227  
 <211> 10  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 227  
 Pro Phe Arg Lys Ala Gln Ile Gln Gly Leu  
 1 5 10

<210> 228  
 <211> 10  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 228  
 Pro Tyr Leu Asp Leu Gln Pro Glu Thr Thr  
 1 5 10

<210> 229  
 <211> 10  
 <212> PRT  
 <213> Epstein-Barr Virus

<400> 229  
 Pro Leu Leu Met Gly Thr Leu Gly Ile Val  
 1 5 10

<210> 230  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Epitopes of anti-HIV proteins

<400> 230  
 Pro Ala Ser Thr Thr Thr Asn Tyr Thr  
 1 5

<210> 231  
 <211> 9  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> database for MHC ligands and peptide motifs

<400> 231  
 Ser Tyr Phe Pro Glu Ile Thr His Ile  
 1 5

<210> 232

<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> B cell epitope

<400> 232  
Lys Ala Ser Ile Phe Leu Lys  
1 5